

## REMARKS/ARGUMENTS

This amendment is in Response to the Office Action mailed June 17, 2003. Claims 27, 35, 37-43 have been amended and Claim 44 has been added. Claims 1-22, 24, 25, 28-31, and 34 now stand cancelled without prejudice. Therefore, Claims 23, 26, 27, 32, 33, and 35-44 are currently pending in this application. The applicants respectfully submit that this amendment places the claims in condition for allowance. Accordingly, the applicants respectfully request entry of this amendment and request reconsideration of the remaining claims.

### Oath/Declaration:

A new declaration was mailed to the USPTO in a communication dated May 30, 2003. This communication was received in the USPTO on June 10, 2003.

### Rejections Under 35 U.S.C. § 103:

Claims 23, 26, 27, 32, 33, and 35-43 are rejected as being unpatentable over Collins, et al. EP 0 837 489 A2 (hereinafter *Collins*) in view of Collins USPN 6,572,732 (hereinafter *Collins 732*) under 35 U.S.C. § 103.

It is asserted that *Collins* teaches or suggests all the limitations of the claims. However, the Office Action expressly states that the *Collins* reference fails to teach cooling the chamber by cooling through the heating element. The Office Action maintains that a second *Collins* reference (*Collins '732*) teaches cooling through the heating element. Thus, the Office Action maintains the present invention is unpatentable over *Collins* in view of *Collins '732*.

In order to sustain a *prima facie* case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)

In the present case, there is no suggestion to modify the reference because the proposed modification (i.e., attempting to cool the chamber by cooling through the heat

lamps) would render the *Collins* device inoperative. In *Collins* the radiant heaters 72 never touch the roof of the chamber, thus, it would be impossible to conduct a cooling flow to the chamber to achieve chamber cooling through the radiant heaters 72. When a “proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.” *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Thus, there is no motivation to modify or combine the two *Collins* references to achieve the claimed invention. The two *Collins* devices simply operate differently and are not combinable because the heater 520 and cooler 510 combination of *Collins* ‘732 will render the other *Collins* device inoperative.

Additionally, due to the inoperability of the proposed invention, there can be no reasonable expectation of success. And thirdly, because the cited reference does not teach cooling through the heating element, the cited reference does not teach all of the limitations of the claim. Consequently, as to Claim 23 (and the claims depending therefrom i.e., 26, 27, 32, 42, and 43) the cited art does not establish a prima facie case of obviousness.

The same can be said for Claim 33, which also includes a similar limitation of “cooling the plasma processing chamber by actively cooling the thermal control block so that the cooling is provided by the cooling element through the heating element”. Consequently, as to Claim 33 (and the claims depending therefrom, i.e., 35, 36) the cited art does not establish a prima facie case of obviousness.

Also, as amended, a similar limitation can be found in Claim 37 which includes the limitation of “cooling the plasma processing chamber by actively cooling the resistive heating block”. Consequently, as to Claim 37 (and the claims depending therefrom, i.e., 38-41 and 44) the cited art does not establish a prima facie case of obviousness.

Therefore, Applicants assert that Claim 23 (and the dependent claims 26, 27, 32, and 43), Claim 33 (and the dependent claims 35 and 36), and Claim 37 (and the dependent claims 38-41 and 44) are each patentable over the cited art. In particular, Collins has failed to establish a prima facie case of obviousness. Thus, applicants request that this grounds for rejection be withdrawn as to the above claims.

**Claims 32, 36, 37-42, and 44**

Claim 32 is dependent on Claim 23 and should be allowable for at least the reasons discussed hereinabove. Additionally, Claim 32 includes the limitation of thermal control blocks that “include notches configured to prevent RF energy from coupling with the thermal control blocks.” The Office Action suggests that any “notches” at all can accomplish this task. However, the Office Action fails to provide any support for such an assertion. No cited art is provided to support the proposition that the *Collins* “notches” (in Figs. 18 and 19 at element 1000, 1020) can or do prevent RF energy coupling with the thermal control block. There is no teaching or suggestion in *Collins* that elements 1000, 1020 are configured to prevent RF energy coupling. In fact *Collins* expressly states (at 9:45-50) that the cooling element 74 is moved well above the solenoid 42 in order to mitigate RF coupling. Thus, it can hardly be said that *Collins* elements 1000, 1020 were used to prevent RF energy coupling. The *Collins* elements 1000, 1020 are merely a manifold and cooling channels only. There is no teaching that they in any way function to prevent RF energy from coupling with the thermal control blocks.

The *Collins* specification clearly identifies 1000 as a manifold “into which a thermally conductive gas such as helium may be supplied from a source 1010 under positive pressure.” There is no teaching or suggestion that such manifold is for preventing RF coupling into the manifold. Additionally, gas orifices 1020 connect to the manifold 1000 to permit helium “to fill voids in the interface”. Simply put, 1000 and 1020 are gas transfer passages, nothing more. Thus, the cited art does not teach or suggest notches for preventing RF coupling into the manifold. Therefore, for both the reasons elucidated above, *Collins* fails to establish a *prima facie* case of obviousness. Respectfully, it is submitted that Claim 32 is allowable.

Claims 35 and 36 are dependent on Claim 33 and should be allowable for reasons discussed hereinabove with respect to Claim 33. Additionally, Claim 36 includes the limitation of thermal control blocks that “includes notches formed therein to prevent RF energy from coupling with the thermal control block”. Thus, for the same reasons set forth herein with respect to Claim 32 discussed above *Collins* is an inapplicable reference. There is no teaching or suggestion that the thermal control blocks, or notches formed therein, are capable of preventing RF coupling with the thermal control block as is claimed here. Thus, the cited art does not teach or suggest notches for preventing RF coupling into the manifold. Therefore, for these and other reasons, *Collins* fails to establish a *prima facie* case of obviousness. Respectfully, it is submitted that Claim 36 is allowable.

Claim 37 (and associated dependent claims) includes the limitation of “preventing RF energy from coupling with the thermal control block”. Thus, for at least the same reasons set forth herein with respect to Claims 32 and 33, *Collins* is an inapplicable reference. There is no teaching or suggestion in *Collins* of preventing RF coupling with the thermal control block as is claimed here. Thus, the cited art does not teach or suggest notches for preventing RF coupling into the manifold. Therefore, for these and other reasons, *Collins* fails to establish a *prima facie* case of obviousness. Respectfully, it is submitted that Claim 37 (and claims depending therefrom, e.g., 38-40, and 44 are allowable).

Additionally, as to Claim 38, the cited references do not teach or suggest “including notches in the thermal control block to prevent RF energy from coupling with the heating block”. Thus, *Collins* fails to establish a *prima facie* case of obviousness as to these claims.

### **Claims 26 and 33-36**

Claim 26 is dependent on Claim 23 and should be allowable for at least the reasons discussed hereinabove with respect to that Claim. Additionally, Claim 26 includes the limitation of having “a thermal break element coupled between the heater element and the cooling element.” No such limitation is present in any of the cited portions of the cited references. Thus, it is respectfully submitted that this grounds for rejecting Claim 26 be withdrawn.

Moreover, Claim 33 includes a limitation of “providing a thermal control block ... having a heating element and a cooling element with a thermal break element coupled between the heater element and the cooling element”. Again, no such limitation is present in any of the cited portions of the cited references. Thus, it is respectfully submitted that this grounds for rejecting Claim 33 (and dependent Claims 25 and 36) be withdrawn.

Additionally, Claim 41 (as amended) includes a limitation of providing “a thermal break element is coupled between the heating block and the cooling element”. As before, no such limitation is present in any of the cited portions of the cited references. Thus, it is respectfully submitted that this grounds for rejecting Claim 41 has been overcome.

**Claims 27, 35, 37-44**

Claim 27 is dependent on Claim 23 and should be allowable for at least the reasons discussed hereinabove. Additionally, amended Claim 27 includes the limitation of “biasing the thermal control blocks against a roof portion of the plasma processing chamber.” As for *Collins*, the radiative heater 72 is not biased against the plasma chamber at all. As for *Collins* '732 all of the cited thermal elements (520, 510 Figs. 26-29) biased against or otherwise in contact with an antenna holder 147, 147', 500 which is placed on conductive backplane 400 which is then contacted to a ceiling 110. The thermal disadvantages of such an arrangement are rather obvious. Thus, it cannot be said that the cited art alone, or in any reasonable combination thereof, teaches biasing the thermal control blocks against a roof portion of the plasma processing chamber. Consequently, the cited portions of the references have failed to establish a *prima facie* case of obviousness as to Claim 27. Therefore, it is respectfully requested that this grounds for rejecting Claim 27 be withdrawn.

Claim 35 includes a similar limitation to Claim 27 “biasing the thermal control block against a roof portion of the plasma processing chamber.” Thus, for at least the reasons advanced hereinabove with respect to Claim 35 it respectfully submitted that the cited portions of the references have failed to establish a *prima facie* case of obviousness. Therefore, it is respectfully requested that this grounds for rejecting Claim 35 be withdrawn.

Claim 37 includes analogous claim limitation to that of Claim 27. In particular Claim 37 (as amended) includes “heating the plasma processing chamber by heating a resistive heating block that is in physical contact with the roof of the plasma processing chamber”. As explained above, none of the cited portions of the references teach or suggest a heating block in physical contact with the roof of the plasma processing chamber. Thus, the cited references fail to establish a *prima facie* case of obviousness. Therefore, it is respectfully requested that this grounds for rejecting Claim 37 (and dependent claims 38-41 and 44) be withdrawn.

**Added Claim 44:**

Added Claim 44 includes the limitation of “further including preventing RF energy from coupling with the heating block and the cooling element said coupling being prevented by including notches in the heating block and the cooling element to prevent RF energy from

coupling with the heating block and the cooling element". Support for this limitation is found throughout the specification and drawings. For example, at page 12: line 12- page 13:line 2 of the Specification. In addition to the previously discussed limitation of "preventing RF energy from coupling" the above discussions of Claims 37 and 40 are also applicable. Thus, it is clear that the cited art does not teach or suggest the invention claimed in Claim 44. Thus, it is submitted that Claim 44 is allowable.

It is respectfully submitted that, in light of the above amendments and discussion, Claims 23, 26, 27, 32, 33, and 35-43 are patentable over the art of record and the present application is in condition for allowance. A Notice of Allowance is respectfully requested. Should the Examiner have any questions regarding the above amendments, or questions concerning inventor citizenship, the Examiner is cordially invited to telephone the Applicants' representative below.

Respectfully submitted,  
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